

FESSENKO, N. Ya.

GASIK, I.I.; FESSENKO, N.Ya.

Patronage of rural hospitals by city hospitals. Sov.sdrav. 16  
no.3:36-38 Mr '57. (MLRA 10:6)

1. Iz 4-y Gorodskoy bol'nitsy (glavnyy vrach G.D.Tepanov),  
g.Zaporozh'ye.

(HOSPITALS

in Russia, patronage of rural hosp. by city hosp.)

FESSENKO, N. Y.

Foreign body present in the neck for 33 years. Nov.khir.arkh.  
no.3:82 My-Je '57. (MIRA 10:8)

1. Zaporozhskaya gorodskaya bol'nitsa.  
(NECK--FOREIGN BODIES)

FESENKO, N.Ya.

Treatment of hiccups with novocaine block of the cervical sympathetic ganglia. Vrach. delo no.12:137 D '60. (MIRA 14:1)

1. Poliklinicheskoye otdeleniye (zav. + V.I.Kumok) Zaporozhskoy chetvertoy gorodskoy bol'nitsy.  
(HICCUP) (NOVOCaine)

IVANOV, Aleksandr Aleksandrovich; FESENKO, P.V., red.; SOLOMONIK, R.L.,  
tekhn.red.

[Antiaircraft gunner's concise artillery handbook] Kratkii  
artilleriisko-strelkovyi spravochnik zenitchika. Moskva, Voen.  
izd-vo M-va obor. SSSR, 1959. 206 p. (MIRA 12:4)  
(Antiaircraft guns)

ASHKEROV, V.P.; ZABELOK, B.G.; KALUGIN, Ye.I.; SHEVCHENKO, L.P. Prinsipali  
uchastnye; DESNITSKIY, G.S.; KOCHUROV, A.N.. DEMIDOV, P.K., red.;  
FESSENKO, P.V., red.; MYASNIKOVA, T.F., tekhn.red.

[Air-defense forces] Voiska protivovozdushnoi oborony strany.  
Pod obshchey red. P.K.Demidova. Moskva, Voen.izd-vo M-va obor.  
SSSR, 1960. 217 p. (MIRA 13:9)

(Air warfare)

RAZORENOV, N.G.; FESENKO, P.V., red.; KRASAVINA, A.M., tekhn. red.

[Computing devices and tracking systems] Schetno-reshaiushchie  
ustroistva i slediashchie sistemy. Moskva, Voen. izd-vo M-va  
oborony SSSR, 1961. 51 p. (MIRA 14:11)  
(Radar) (Electronic calculating machines) (Potentiometer)

DESNITSKIY, Gleb Sergeyevich; FESSENKO, P.V., red.; SOKOLOVA, G.F.,  
tekhn. red.

[Sentinels of the air space above our country] Chasovye vozdukh-  
nykh prostorov rodiny. Moskva, Voen. izd-vo M-va oborony SSSR,  
1961. 151 p. (MIRA 15:2)  
(World War, 1939-1945) (Antiaircraft artillery)

KYUPAR, I.I.; FESENKO, P.V., red.; CHAPAYEVA, R.I., tekhn. red.

[Guidance of antiaircraft rockets] Navedenie na tsel' zem-  
nitnykh raket. Moskva, Voenizdat, 1963. 88 p.

(MIRA 16:11)

(Guided missiles--Guidance systems)



FESENKO, S.; STARENCHENKO, P.; KULEBYAKIN, Yu., inzh.

Exchange of experience. Avt.transp. 42 no. 4:51-52 Ap '64.  
(MIRA 17:5)

FESENKO, S. A.

22450. FESENKO, S. A. Ob uchete posledstviy og zatopleniya i podtopleniya pri  
proyatirovanii gidrotekhnicheskikh sooruzhenii. Gidrotekhn. Stroit-vo, 1949  
No 7, S, 13-15

SO: LETOPIS' No. 30, 1949

L 21730-65 ENT(d)/FSS-2/ENT(1)/EEC(k)-2/END(y)/FCC/EEC-1/EEC(t)/EMA(h) Pa-5/  
Pg-1/Pi-1/P1-1/Pn-1/Po-1/Pp-1/Pq-1/Pt-10/Pac-1/Pae-2/Pet ESD(c) RB/GW/WS  
ACCESSION NR: AP4043719 S/0106/64/000/008/0077/0078

AUTHOR: Chasovitin, Yu. K.; Fesenko, S. G.

TITLE: Probability of  $E_s$ -layer radio communication

SOURCE: Elektrosvyaz', no. 8, 1964, 77-78

TOPIC TAGS: radio communication, sporadic layer radio communication

ABSTRACT: An attempt is made to assess the probability of radio communication via  $E_s$ -layer on the basis of a vertical sounding of the ionosphere in the city of Rostov-on-the-Don, Apr58 through Mar59. A 2,000-km line was calculated, the length being equal to the maximum hop distance for the  $E_s$ -layer. The periods when the  $E_s$ -layer was determining the radio communication were determined by comparing the  $E_s$ -MUF with that of the regular layers. The maximum  $E_s$ -communication probability was found to be 44% in June during the daytime and

Card 1/2

L 21730-65

ACCESSION NR: AP4043719

10-- 3% in May-July during the nighttime. Orig. art. has: 1 figure. ①

ASSOCIATION: none

SUBMITTED: 04Sep62

ENGL: 00

SUB CODE: EC, ES

NO REF SOV: 004

OTHER: 003

Cord 2/2

VASIL'YEV, M.V.; FESENKO, S.L.

Determining the optimal distribution of transfer points in combined transportation with the help of electronic computers. Gor. zhur.  
no.11:56-58 N '64. (MIRA 18:2)

1. Institut gornogo dela, Sverdlovsk.

PERENKO, S.S.

Vertical-loop foundry conveyor. 116.prod2v. no.7314 J1 '64.  
(MIR 18:4)

BOGDANOVSKIY, I.M.; FESENKO, T.A., red.

[Laboratory chromatographs; a survey] Laboratornye khromatografy; obzor. Moskva, TSintielektroprom, 1963. 127 p.  
(MIRA 17:9)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po elektrotekhnike.

F E S E N K O , T . F .																									
<p>The influence of x-rays on diphtheria toxin and serum.            I. P. Mischenko and T. F. Vesenko. <i>J. Microbiol., Epi-            demiol. Immunobiol.</i> (U. S. S. R.) 14, 209-10 (in German            216) (1935).—The x-ray irradiation of diphtheria serum            with 50 H. E. D. over a period of 2 months yielded no            albumin-decompn. products. The decolorization and floccu-            lation of the serum had no influence on the antitoxic            and anaphylactic characteristics of the serum. After 10            months both the irradiated serum and the control showed            the same characteristics. The irradiation of diphtheria            toxin with 49 H. E. D. led to the formation of considerable            albumin-decompn. products, but there was no significant            change in toxic properties. S. A. Karjala</p>																									
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																									



FESENKO, T.F.		PROCESS AND PROPERTIES INDEX	
ca		11G	
Antigens in the urine of typhoid fever patients. II. Serologic evaluation. S. A. Blinkin and T. F. Fesenko. <i>Med. expl. (Ukraine)</i> , No. 1, 87-93(1947). - Abtgen: Substances were found in the urine of these patients for a long period of time beginning with the early stages of the disease (4-17 days). These antigens were evaluated serologically by means of specific serum from typhoid patients, the ring-pptn. reaction and complement-fixation tests.			
S. A. Carson			
ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION			
FROM STATION		TO STATION	
GROUP		SUBJECT	

F E S E N K O T F																									
1ST AND 2ND ORDERS													PROCESSING AND PROPERTIES INDEX												
<p>Chemical factors in the reflex transmission of nervous impulses. D. R. Alpern and T. F. Fesenko. <i>Arch. sci. biol.</i> (U. S. S. R.) 51, No. 1, 1957 (in English, 63-4) (1958).—A substance showing reactions similar to acetylcholine is found in the blood during the course of the Ashner phenomenon (pressure on the eye-ball resulting in a fall in the pulse rate). S. A. Karjala</p>																									
<p>ASH S.L.A. METALLURGICAL LITERATURE CLASSIFICATION</p>																									
<p>1957-1958</p>																									

FESENKO, T.F.

MD ✓ The renal-humoral factor in neurogenic forms of hypertension. T. F. Fesenko (Med. Inst., Kharkov). *Arkhh. Patol.* 17, No. 4, 44-9 (1955).—In blood of dogs a hypertensive substance was found of the renin type on the 15-20th day following cerebral kaolin injection, which persisted throughout the period of hypertension (4-6 mos.), probably because of the early participation of renal-pressor factor in the pathology of exptl. centrogenic hypertension. In the blood of rabbits with exptl. reflexogenic hypertension, with only few exceptions, no characteristic hypertensive activity was observed. It is postulated that the increase in blood pressure in exptl. reflexogenic hypertension is independent of the renal-pressor factor.  
B. S. Levine

FESENKO, T.M.

Formation of city settlements in the western region of Dzhungarian.  
Alatau. Trudy Otd. geog. AN Kazakh. SSR no.10:163-179 '63.  
(MIRA 16:10)

FESENKO, V.

Using bins for hauling and distributing feeds. Nauka i pered.  
op.v sel'khoz. 9 no.8:40-41 Ag: '59. (MIRA 12:12)

1. Glavnyy zootekhnik Opytnogo khozyaystva "Ukrainka" Nauchno-  
issledovatel'skogo instituta zhivotnovodstva Lesostepi i Poles'-  
ya USSR.

(Farm equipment) (Feeding)

FESSENKO, V.

Turbine on wheels. Tekh.mol. 28 no.6:5-7 '60.  
(MIRA 13:7)

1. Vedushchiy inzhener po gasoturbinnomu avtobusu Nauchno-  
issledovatel'skogo avtomobil'nogo i avtomotornogo instituta.  
(Motorbuses) (Gas turbines)

FESENKO, V. D.

PA 67T101

USSR/Mines and Mining  
Mining Methods  
Blasting

Jun 1948

"Mass Blasting in Faults in the Dashkesansk Mine,"  
I. A. Alferov, V. D. Fesenko, Mining Engineers, 14 pp

"Gor Zhur" No 6

Mass blasting was first used in 1946. Describes  
advantages gained by this method of working deposits  
at the Dashkesansk mines.

10

67T101

FESENKO, V. D.

127-10-4/24

SUBJECT: USSR/Mining

AUTHORS: Shifrin, I. I. and Fesenko, V. D., Mining Engineers

TITLE: Construction of the Dashkesan Open Mine (Stroitel'stvo Dashkesanskogo kar'yera)

PERIODICAL: Gornyy Zhurnal, 1957, #10, pp 17-22 (USSR)

ABSTRACT: The Dashkesan iron ore deposit in the Azerbaydzhan SSR is located in a mountainous region, 1,600 to 1,800 m above sea level. The deposit consists of two sections (north-eastern and north-western) separated by the canyon of the Kashkar-Chay River. It is a deposit of the skarn-magnetite type with a 10 to 12° angle of dip. The thickness of the ore body varies from 3 to 35 m. The thickness of the covering rocks varies from zero to 90 m in the north-western section and up to 135 m in the north-eastern section. The average iron content in the ores of the north-eastern section is 45% and in the north-western section 37 %. The ratio of resources of these sections is 1 to 3.

It was planned to mine the north-eastern section by underground methods. The practice has shown that strip-mining is more expedient. The height of the benches is 10 m. Rocks and ores

Card 1/3



127-10-4/24

## TITLE:

Construction of the Dashkesan Open Mine. (Stroitel'stvo Dashkesanskogo kar'yera)

are loaded with "C3-3" excavators and transported to a concentration plant by dump trucks. The planned annual capacity of the north-eastern section is 800,000 tons of ore. The actual output in 1956 was 854,000 tons.

The north-western section is exploited by strip-mining. The construction of the open pit was begun at the end of 1954 and the first ore was delivered to the concentration plant early in 1955. The planned capacity of the northwestern section is 1,600,000 tons per year; its actual output in 1956 was 535,000 tons.

The concentration plant was built originally to operate on the dry magnetic separation method. Due to imperfections in the technological process, it was decided to reconstruct the plant and to apply the wet magnetic separation method to obtain an agglomeration concentrate with 60 % iron content. The present concentrate has only an iron content of 53.5 %. The projected capacity of the plant after reconstruction is 1,312,000 tons of concentrate per year. The actual output in 1956 was 956,000 tons.

Card 2/3

127-10-4/24

TITLE: Construction of the Dashkesan Open Mine (Stroitel'stvo Dashkesanskogo kar'yera)

The article contains 1 geologic cross section, 2 photos, 2 diagrams and 1 table.

No references are cited.

ASSOCIATION: Dashkesan Mine Administration (Dashkesanskoye radoupravleniye)

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 3/3

L 07520-67 EWT(d)/ENP(1) IJP(c) BB/GG  
ACC NR: AR6028113

SOURCE CODE: UR/0372/66/000/005/V047/V048

AUTHOR: Fesenko, V. I.

TITLE: On optimal design of a translator arithmetic unit 16C

27

13

SOURCE: Ref. zh. Kibernetika, Abs. 5V342

REF SOURCE: Izv. AN MoldSSR. Ser. fiz.-tekhn. i matem. n., no. 7, 1965, 108-113

TOPIC TAGS: arithmetic unit, optimal design, circuit design

ABSTRACT: The report considers problems on translation of arithmetic expressions. A version of the address language described in E. L. Yudenko's report entitled "Address programming" (Tekhizdat UkrSSR, 1963) is employed as the input language. The author introduces some supplemental considerations in defining the address function as given by M. M. Bushko-Zhuk in "Defining the address function and the principles of compiling programming programs" (Izv. AN MSSR, 1962, No. 5). These modifications permit the use of mildly parenthetical writing in constructing a translator. Consideration is also given to a problem on economy of operating cells through allowable rearrangements of components (cofactors). [Translation of abstract] E. Lukhovitskaya

SUB CODE: 09

Card

UUC: 631.142.002,5:51

RABINOVICH, A.N., dir.tekhn.nauk; MATVEYCHUK, V.S., inzh.; FASENKO, V.I.,  
inzh.

Vertical-feeder hoist with automatic regulation of the high level  
of blanks. Mashinostroitel' no.1:5-6 Ja '60.

(MIRA 13:4)

(Machine tools--Attachments)

DOLGOPOLOV, F.F., inzh.; STOLBUN, M.I., inzh.; FESENKO, V.I., inzh.

Automatic loading devices for skip units. Mekh. i avtom. proizv.  
19 no.4:15-16 Ap '65. (MIRA 18:6)

FESENKO, V.K.; KUZNETSOV, A.P., kand. tekhn. nauk

Road tests of the ZIL-127 motorbus with the TurboNAMI-053  
gas-turbine engine. Avt. prom. 30 no.5:23-26 My '64.

(MIRA 17:9)

1. Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo  
Znameni nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy.  
institut i Moskovskiy avtomekhanicheskiy institut.

BAYKALOV, L.K.; GONCHAROVA, Z.M.; AL'PERIN, A.I.; FESENKO, V.P.

Treatment of patients with diseases of the liver and biliary tract at the Truskavets health resort. Vrach. delo no.10: 40-45 0 '63. (MIRA 17:2)

1. Klinika bolezney organov pishchevareniya (ispolnyayushchiy obyazannosti zaveduyushchego - L.K. Baykalov) Ukrainskogo instituta kurortologii i fizioterapii i sanatoriy No.1 kororta Truskavets.

PESENKO, V.P.

Effectiveness of the treatment of chronic colitis in Truskavets  
Health Resort. Vop. kur., fizioter. i lech. fiz. kul't. 29 no.4:  
345-350 J1-Ag '64. (MIRA 18:9)

1. Klinika bolezney organov pishchevareniya (ispolnyayushchiy  
obyazannosti (zav. - kand. med. nauk L.K.Baykalov, nauchnyy  
rukovoditel' - dotsent I.I.Markov), Truskavets.



BONDARENKO, D.G., red.; BUGAYENKO, P.I. [Buhaienko, P.I.], red.; VASH, O.V., red.; KLIMPOTYUK, M.V., red.; PASTUSHENKO, M.S., red.; POVKH, V.O., vidp. red.; POLISHCHUK, V.P., red.; BUSIN, V.P., red.; FESIN'KO, V.V., red.; LUCHKIV, M., tekhn. red.

[Soviet Transcarpathia; a handbook] Radians'ke Zakarpattia; dovidnyk. Ushhorod, Zakarpats'ke obl. vyd-vo, 1957. 239 p. (MIRA 11:7)  
(Transcarpathia)

FESENKO, V. V.

FESENKO, V. V.- "Investigation of the Interchange of Oxygen in Polyoxybenzols and Nitrophenols." Acad Sci Ukraine SSR, Inst of Physical Chemistry imeni L. V. Pisarzhevskiy, Kiev, 1954 (Dissertations for Degree of Candidate of Chemical Sciences)

SO: Knizhnaya Letopis' No. 26, June 1955, Moscow

*PESENKO, V. V.*

USSR/Chemistry -- Physical chemistry

Card 1/1 Pub. 22 - 30/52

Authors : Resenko, V. V., and Gragerov, I. P.

Title : Isotopic oxygen exchange in hydroxybenzenes and nitrophenols

Periodical : Dok. AN SSSR 101/4, 695-598, Apr 1, 1955

Abstract : Experiments were conducted for the purpose of obtaining more positive data on the isotopic oxygen exchange in various hydroxybenzenes and nitrophenols as well as in acid and alkali media. The exchange process was investigated after reduction of the  $O^{18}$  content in the heavy-oxygen water then enriched 4-5 times with the very same isotope and freed of any excess deuterium. The entire work was carried out by means of a conventional flotation method and the results obtained are described. Four references: 2 USSR and 2 English (1938 and 1952). Table.

Institution : Acad. of Sc., Ukr-SSR, The L. V. Pisarzhevskiy Inst. of Phys. Chem.

Presented by : Academician A. N. Frumkin, October 30, 1954

SOV/24-58-7-31/36

AUTHORS: Yeremenko, V.N., Ivashchenko, Yu.N., Nizhenko, V.I.  
and Fesenko, V.V. (Kiyev)

TITLE: Determination of the Surface Tension of Metals of the  
Iron Family (Opredeleniye poverkhnostnogo natyazheniya  
metallov semeystva zheleza)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh  
nauk, 1958, Nr 7, pp 144 - 146 (USSR)

ABSTRACT: The authors point out that wide discrepancies exist in  
the published data on the surface tension of iron  
(Refs 1, 2) and nickel (Refs 3-5) and that only one  
investigation has been made on that of cobalt (Ref 5).  
They describe an investigation in which the surface  
tension of these metals (less than 0.01% impurity) was  
measured by two methods. In experiments by the recumbent  
drop method the drop was supported on pure alumina,  
beryllia or magnesia in a water-cooled quartz tube with  
suitable screening. Heating was by induction with a  
graphite element, temperature measurement by a previously  
calibrated optical pyrometer to an accuracy of 20 °C.  
The apparatus, shown in Figure 1, was provided with an

Card 1/3

SOV/24-58-7-31/36

## Determination of the Surface Tension of Metals of the Iron Family

optical system for photographing the shadow of the drop. Tests were carried out in vacuo and also in purified helium and hydrogen. The surface tension was calculated with the use of published tables (Ref 6). The reliability of the method was checked by determining the surface tension of aluminium and good agreement with published data was obtained. A second series of determinations was made with the bubble-pressure method (Figure 2). A beryllium capillary was used, allowance being made for wall thickness. Metal temperatures were measured to  $\pm 10^\circ \text{C}$  with a type TsNIChM-1 tungsten-molybdenum thermocouple. Purified helium and hydrogen were used to form the bubble. The results obtained by the two methods at  $1470 - 1650^\circ \text{C}$  are tabulated, showing that the accuracy of both is about  $\pm 5\%$ . There are 2 figures, 1 table and 12 references, 3 of which are Soviet, 6 English and 3 German.

Card 2/3

SOV/24-58-7-31/36

Determination of the Surface Tension of Metals of the Iron Family

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov  
AN USSR (Cermets and Special Alloys Institute,  
Ac.Sc., Ukrainian SSR)

SUBMITTED: October 17, 1957

Card 3/3

18.8100

1418 1454

32594 s/137/61/000/011/004/123  
A060/A101

AUTHORS: Fesenko, V. V., Yeremenko, V. N.

TITLE: Method of maximal pressure in a gas bubble as applied to the determination of surface tension of metals of the iron family

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 11, 1961, 5, abstract 11A37 ("Byul. In-t metallokeram. i spets. splavov AN USSR", 1959, no. 4, 52-64)

TEXT: An analysis is carried out in order to determine the possibility of applying the method of maximal pressure in a gas bubble to investigate the surface tension  $\sigma$  of melts which do not wet the material of the capillary. A method of calculation is proposed which allows one to determine the  $\sigma$  of non-wetting liquids on the basis of experimental data obtained from measurements taken with thick-walled capillaries. A description is given of an apparatus for the measurement of  $\sigma$  and the results are cited of the determination of the  $\sigma$  of Ni ( $1,520 \pm 60$  dynes/cm), Co ( $1,600$  dynes/cm) and Fe ( $1,415 \pm 90$  dynes/cm) at  $1,500 - 1,600^\circ\text{C}$ .

V. Lazarev

[Abstracter's note: Complete translation]

Card 1/1

87521

S/073/60/026/002/008/015  
B023/B067

54400

1273 1087. 1274.

AUTHORS:

Pesenko, V. V. and Yeremenko, V. N.

TITLE:

Apparatus for Measuring the Surface Tension of Metals at High Temperatures by the Method of Maximum Pressure in Gas Bubbles

PERIODICAL:

Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 2, pp. 198-200

TEXT: The authors designed a vacuum apparatus for determining the surface tension of liquid metals at temperatures up to 1700° by the method of maximum pressure in the gas bubble. The measurements were made by means of beryllium oxide capillary tubes. The scheme of this apparatus is shown in the figure. 1 - vacuum chamber, 2 - resistance furnace, 3 - heat-insulating screens, 4 - metal containing crucible, 5 - ceramic capillary, 6 - manometer with vacuum oil, 7 - regulating capillary tap, 8 - quartz tube, 9 - regulating device, 10 - vacuum pump, 11 - manometric tubes, 12 - gas purification chamber, 13 - furnace with metallic calcium, 14 - liquid-nitrogen cooled trap a) to the auxiliary pump, b) gas. With this

Card 1/3



Apparatus for Measuring the Surface Tension of  
Metals at High Temperatures by the Method of  
Maximum Pressure in Gas Bubbles

87521  
S/073/60/026/002/008/015  
B023/B067

apparatus the authors studied the surface tension of pure liquid mercury,  
tin, copper, and of metals of the iron group. Some measurement results  
for 99.99%-purity metals are given in the table.

metal	t°C	surface tension dyn/cm	
		in helium	in hydrogen
mercury	20	475	475
tin	600	530	530
copper	1250	1290	1300
nickel	1470	1490	1650
cobalt	1520	1620	1590
iron	1650	1430	1400

There are 1 figure, 1 table, and 2 references: 1 Soviet, 1 US, 1 British,  
and 1 German.

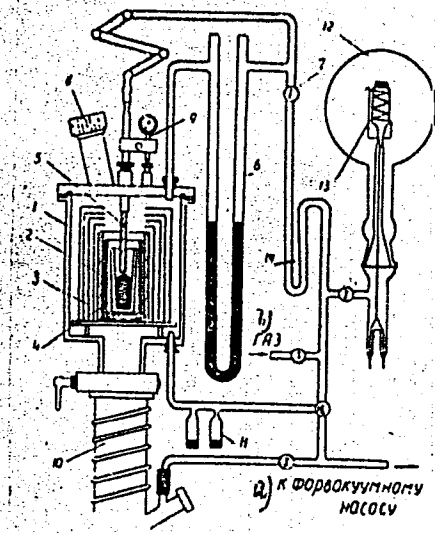
ASSOCIATION: Institut metallokeramiki i spetsialnykh splavov AN USSR  
(Institute of Powder Metallurgy and Special Alloys of the  
Academy of Sciences UkrSSR)

SUBMITTED: October 6, 1958

Card 2/3

87521

S/073/60/026/002/008/015  
B023/B067



Card 3/3

S/137/62/000/003/004/191  
A006/A101

AUTHORS: Fesenko, V. V., Vasiliu, M. I.

TITLE: The temperature dependence of surface tension for cobalt and nickel

PERIODICAL: Referativnyi zhurnal, Metallurgiya, no. 3, 1962, 8, abstract 3A49  
("Poroshk. metallurgiya", 1961, no. 3, 25-28, English summary)

TEXT: The method of maximum pressure in a gas bubble (in He and H<sub>2</sub> medium) was used to investigate the temperature dependence of surface tension  $\sigma$  for molten Co and Ni. At 1,550°C  $\sigma$  is 1,845 dyne/cm for Co, and 1,735 dyne/cm for Ni. With higher temperature  $\sigma$  decreases, the temperature coefficient for Co is 0.49, and 0.38 for Ni. Some thermodynamical and physical characteristics of liquid Ni and Co are calculated (molar surface concentrations of free energy, entropy, heat capacity and others).

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

11.1380  
21.2500

36131  
S/137/62/000/003/070/191  
A006/A101

AUTHOR: Fesenko, V.V.

TITLE: Thermodynamical properties and the behaviour of boron nitride at high temperatures

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 43, abstract 3G298 "Poroshk. metallurgiya", 1961, no. 4, 80 - 85, English summary)

TEXT: The author calculated the isobaric potential, the equilibrium constant and N pressure in reactions  $BN_{sol.} = BN_{sol.} + 1/2 N_2$  and  $BN_{sol.} = B_{gas} + 1/2 N_2$ . Within a range of 2500 - 3000°C, the reaction heat with the formation of gaseous B is about 160 kcal, the sublimation heat of B is about 100 kcal. The authors estimated also the values of the isobaric potential, heat, and steam pressure of BN.

R. Andriyevskiy

[ Abstracter's note: Complete translation ]

Card 1/1

NAYDICH, Yu.V.; YEREMENKO, V.N.; FESENKO, V.V.; VASILIU, M.I.; KIRICHENKO, L.F.

Temperature dependence of the surface tension of liquid cooper. Zhur.  
fiz. khim. 35 no.3:694-695 Mr '61. (MIRA 14:3)

1. Institut metallokeramiki i spetsial'nykh splavov.  
(Surface tension) (Copper)

PESENKO, V.V. (Kiyev)

Measurement of the surface tension of liquids by applying the  
maximum gas bubble pressure method. Zhur. fiz. khim. 35  
no. 4:707-710 Ap '61. (MIRA 14:5)

1. Institut metallokeramiki i spetsial'nykh splavov AN USSR.  
(Surface tension)

S/076/61/035/008/005/016  
B101/B218

AUTHORS:

Fesenko, V. V., Yeremenko, V. N., and Vasiliu, M. I. (Kiyev)

TITLE:

Study of the surface tension of liquid metal solutions.  
II Surface tension of alloys of the system nickel-copper

PERIODICAL:

Zhurnal fizicheskoy khimii, v. 35, no. 8, 1961, 1750-1751

TEXT: The authors attempted to check how far Cu-Ni alloys represent ideal systems and obey Raoult's law. For this purpose, the surface tension of Cu, Ni, and their alloys was determined by measuring the maximum pressures in a gas bubble at 1550°C. Measurements were made in pure He or H<sub>2</sub>. Apparatus and method have already been described by the authors (Sb. "Stroyeniye veshchestva i spektroskopiya" (Structure of substance and spectroscopy), 78, 1960, Izd. AN SSSR). The total amount of impurities in the metals used was not higher than 0.1%. The alloys of different composition were molten in crucibles of pure Al<sub>2</sub>O<sub>3</sub> in a high vacuum. Their composition was checked by chemical analysis. For the surface tension of Cu-Ni alloys at 1550°C, the authors give the following values (rounded-off to 5 erg/cm<sup>2</sup>):

Card 1/3

Study of the surface tension ...

S/076/61/035/008/005/016  
B101/B218

atom% of Cu	, erg/cm <sup>2</sup>
0	1735
10	1655
28	1545
50	1430
67	1370
79	1300
100	1265

The data for nickel are in good agreement with those by W. D. Kingery, M. Humenik (see below). The data for copper are much higher than those found by other scientists, as, e.g., E. E. Libman (see below). This discrepancy is explained by the fact that the authors used high-purity copper (99.99%) and conducted the measurements under conditions that excluded contamination. The

experimental data are in good agreement with those calculated according to the Shishkovskiy equation. The constants of this equation were calculated according to A. A. Zhukhovitskiy (Zh. fiz. khimii, 18, 214, 1944). This agreement confirms that the system Cu-Ni is ideal at 1550°C. It follows from the data that the copper in Cu-Ni alloys is surface-active within the entire concentration range investigated. A paper by I. T. Sryvalin, O. N. Yesin, Yu. P. Nikitin (Izv. vuzov, Tsvetnaya metallurgiya, 4, 66, 1958) is mentioned. There are 1 figure, 1 table, and 9 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The two references to English-language publications read as follows: W. D. Kingery, M. Humenik, J. Phys. Chem., 57, 359, 1953;

Card 2/3



Study of the surface tension ...

S/076/61/035/008/005/016  
B101/B218

E. E. Libman, Phys. Rev., 29, 911, 1927.

ASSOCIATION: Akademiya nauk USSR, Institut metallokeramiki i spetsial'nykh  
splavov, g. Kiyev (Academy of Sciences UkrSSR, Institute of  
Powder Metallurgy and Special Alloys, Kiyev)

SUBMITTED: November 23, 1959

Card 3/3

52406

S/076/62/036/003/004/011

B101/B108

18.1220  
11.4300

AUTHORS: Fesenko, V. V., Vasiliu, M. I., and Yeremenko, V. N. (Kiyev)

TITLE: Study of the surface tension of liquid metal solutions. III. Surface tension of cobalt-copper alloys

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 3, 1962, 518 - 520

TEXT: The surface tension of Cu, Co, and their alloys was determined at 1550°C by means of the gas bubble maximum pressure method. The impurity content in the metals was not more than 0.01%. The alloys were molten in Al<sub>2</sub>O<sub>3</sub> crucibles in a vacuum or an H<sub>2</sub> atmosphere. The measurements were made with a beryllium oxide conical capillary (r = 0.247 cm) in H<sub>2</sub> or He. X

Assuming that the solutions in the system Co-Cu are regular above the melting point the Co, the activity  $\alpha$  of the Co in solution in Cu was calculated from the equilibrium diagram:  $\log \alpha = -(T_0 - T)L/4.576TT_0 + T_s \log N/T + (T - T_s) \log N/T$ , where  $T_0$  is the melting point of the pure solvent, L its heat of fusion at  $T_0$ , N' the atom percentage at the solidus temperature  $T_s$ .  
Card 1/3

Study of the surface ...

S/076/62/036/003/004/011  
B101/B108

N the atom percentage at the liquidus temperature  $T_s$ . The activity of Cu was calculated from the Gibbs-Duhem equation. The values of the surface tension rounded to 5 erg/cm<sup>2</sup> are:

$c_{Co}$ (atom-%)	$\sigma$ (erg/cm <sup>2</sup> )
100.0	1,845
96.5	1,775
89.5	1,600
83.0	1,440
76.8	1,430
49.0	1,325
32.0	1,320
0	1,265

These values are in good agreement with those calculated from the equations of A. A. Zhukhovitskiy (Zh. fiz. khimii, 18, 214, 1944):  $\sigma = \sigma_{Co} + n_o RT$

$\ln(b_{Co}/a_{Co})$ ;  $b_{Co}/a_{Cu} = (a_{Co}/a_{Cu}) \cdot \exp [(\sigma_{Cu} - \sigma_{Co})/n_o RT]$ , where  $\sigma$  is the

Card 2/3

Study of the surface ...

S/076/62/036/003/004/011  
B101/B108

surface tension of the alloy,  $b_{Co}$  and  $b_{Cu}$  the activities of Co and Cu in the surface layer,  $a_{Co}$  and  $a_{Cu}$  the activities inside the solution,  $\sigma_{Co}$  and  $\sigma_{Cu}$  the surface tensions of the pure metals,  $n_0$  the number of moles of the pure component per unit surface area,  $\delta$  the displacement coefficient equal to the ratio of the atomic volumes of Cu and Co. Consequently, measurements of the surface tension of alloys can be used as a criterion in the determination of the thermodynamic properties of liquid alloys. There are 2 figures, 1 table, and 9 references: 5 Soviet and 4 non-Soviet. The three references to English-language publications read as follows: Metals Handbook, 1948 ed.; P. Kazakevich, G. Urbain, J. Iron and Steel Inst., 186, 167, 1957; B. C. Allen, W. D. Kingery, Trans. Metallurg. Soc. AIME, 30, 215, 1959.

ASSOCIATION: Akademiya nauk USSR, Institut metallokeramiki i spetsial'nykh splavov (Academy of Sciences UkrSSR, Institute of Powder Metallurgy and Special Alloys)

SUBMITTED: May 29, 1960

Card 3/3

FESENKO, V. V. (Kiev)

"heat conductivity of tantalum and molybdenum carbides in the 2500—3500C range."

Report presented at the Seminar on the Problems of research on thermophysical properties of substances at high temperatures, Novosibirsk, 9-10 April 1963.

FESENKO, V. V.

TITLE: Seminar on refractory metals, compounds, and alloys (Kiev, April 1963).

SOURCE: Atomnaya energiya, v. 15, no. 3, 1963, 266-267

ACCESSION NR: AP3008085

P. A. Nedumov, V. K. Grigorovich. Use of the tungsten resistance thermometer for contactless thermal analysis at temperatures up to 2500C.

Yu. A. Silonov. Unit for determining the evaporation rate of Ta and W on a microbalance for continuous weighing in vacuum.

V. V. Fesenko, S. P. Gordiyenko. Investigation of the composition of evaporation products by the mass-spectrometry method.

V. V. Fesenko, A. S. Bolgar. Evaporation rates and thermodynamic properties of Ti, Zr, Hf, Nb, and Ta monocarbides.

G. S. Pisarenko and others. Mechanical properties of refractory materials in the 20—3000C range.

V. I. Ivanson, D. N. Eyduk. Laws governing deformations.

L. Kh. Pivovarov, A. V. Varaksina. The effect of bonding phase

Card 8/11

L 38498-65 EPF(n)-2/EPR/EWT(m)/EWG(m)/EWP(b)/EWA(d)/EWP(e)/EWP(w)/EWP(t)/T 4/  
Ps-l/Pu-l LJP(c) AT/WH/MW/JW/JD/JG/GS

ACCESSION NR: AT5007724

S/0000/63/000/000/0051/0062

53

AUTHOR: Fesenko, V. V.; Bolgar, A. S.

49  
8+1

TITLE: Combined measurement of the physicochemical properties of refractory compounds at high temperatures

SOURCE: AN SSSR. Institut khimii silikatov. Silikaty i oksidy v khimii vysokikh temperatur (Silicates and oxides in high-temperature chemistry). Moscow, 1963, 51-62

TOPIC TAGS: refractory material, emissivity measurement, melting point determination, resistivity measurement, thermal conductivity coefficient, vaporization rate, vapor pressure, carbide physical property, high temperature measurement

ABSTRACT: The article proposes and describes a simple device (see Fig. 1 of the Enclosure) permitting the measurement of a whole set of physicochemical and physical properties of refractory compounds: emissivity, melting point, electrical resistance, coefficient of thermal conductivity, vaporization rate, and vapor pressure, at temperatures between 2500 and 3500C. Examples of each type of measurement are described: niobium carbide, tungsten and titanium were used in measurements of

27 27 27 27

Card 1/42

L 38498-65

ACCESSION NR: AT5007724

emissivity; niobium carbide, tantalum carbide, hafnium carbide and zirconium carbide were used in melting point determinations; the electrical resistivity of molybdenum, tungsten, niobium carbide and tantalum carbide were measured; the thermal conductivity of tantalum carbide was determined, and the vaporization rates and vapor pressures of  $TiC$ ,  $ZrC$ ,  $HfC$ ,  $NbC$ , and  $TaC$  were found. The values obtained were used to calculate the equilibrium constants, free energies and heats of the dissociation reactions, heats of formation, and atomization energies of these carbides, and are in agreement with data in the literature. Orig. art. has: 4 figures, 6 tables, and 10 formulas.

ASSOCIATION: None

SUBMITTED: 0000463

ENCL: 02

SUB CODE: MT, GP

NO REF SOV: 001

OTHER: 012

Card 2/4



S/226/63/000/001/003/016  
E193/E383

AUTHORS: Fesenko, V.V. and Bolgar, A.S.

TITLE: Rate of volatilization and vapor pressures of silicides, nitrides and borides

PERIODICAL: Poroshkovaya metallurgiya, no. 1 1963, 17 - 25

TEXT: Most of the data tabulated in the present paper have been published before. The original results of measurements carried out by the authors using the Langmuir method included the following: rate of volatilization and dissociation pressures of niobium carbides, tantalum carbides, titanium carbide, titanium diboride and lanthanum hexaboride. Analysis of the available evidence led the authors to the conclusion that all the compounds studied dissociate when heated in vacuum to sufficiently high temperatures and that their vapor pressures are determined by the partial vapor pressures of the metal and metalloid components. It was also found that for compounds of any given metal the rate of volatilization increased in the following order: carbides - borides - silicides - nitrides. There are 14 tables.

Card 1/2 Inst. Metallochemistry & special alloys, AS Ukr SSR

L 21129-65 EPF(c)/EPF(n)-2/EPR/EWP(j)/EWT(m)/EWP(b)/T/EWP(e)/EWP(t)  
 Ps-4/Pr-4/Ps-4/Pu-4 IJP(c)/AEDC(a) AT/RM/WH/JW/JD/JG

ACCESSION NR: AP5002581 6/0076/64/038/012/2974/2975

AUTHOR: Gordiyenko, S. P.; Samsonov, G. V.; Fesenko, V. V.

TITLE: Composition of the vapor over gallium nitride

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 12, 1964, 2974-2975

TOPIC TAGS: gallium nitride, semiconductor nitride, thermal dissociation, gallium nitride vapor, vapor composition, electronic structure

ABSTRACT: The vaporized products of thermal dissociation of pure semiconductor gallium nitride,  $GaN_{0.98}$  have been studied by mass spectrometry at 1000—1150K and ionization potentials at 18—80v. The composition of vapors of semiconductor nitrides was not studied previously, and the data from literature hinted at the existence of complex polymers in the gallium nitride vapors. The vaporization of gallium nitride was carried out in an open crucible.  $Ga^+$ ,  $GaN^+$ ,  $Ga_2N_2^+$ ,  $(GaN_3)^{2+}$ , and dissociation products of polymers were identified by the mass-spectra of vapors. Polymer content in the vapors increased with decreasing ionization potential. It was

Card 1/2

I. 21129-65

ACCESSION NR: AF5002581

concluded that gallium nitride vaporized mainly as dimer, which dissociated in the vapors at the source of ions. The dimerization was correlated with the electronic configuration of Ga and N atoms. An even greater tendency to dimerization was predicted for GaP and GaAs vapors because of the decrease in the energetic stability of their electronic configurations. The superconductivity of GaN at relatively high temperatures is also correlated with the stability of the electronic configuration of both atoms in the GaN molecule. Orig. art. has: 1 table.

ASSOCIATION: Institut problem materialovedeniya Akademii nauk UkrSSR (Institute for the Study of Materials, Academy of Sciences, UkrSSR)

SUBMITTED: 22Apr63

ENCL: 00

SUB CODE: GC, SS

NO REF SOV: 006

OTHER: 003

ATD PRESS: 3165

Card 2/2

FESENKO, V. V.; BOLGAR, A. S.; GORDIYENKO, S. P.

"Study of the vaporization rates and pressures in diffusion reactions and certain thermodynamic problems in refractory compounds up to temperature of 3000 degrees C."

report presented at Intl Colloq on Mechanical & Physical-Chemical Properties of Refractory Materials at High Temperatures, Paris 28 June-1 July 1965.

Inst for Metal-Ceramics & Special Alloys, AS UkSSR, Kiev.

L 33418-65 EWP(e)/EPA(s)-2/ENT(n)/EPF(c)/EPF(n)-2/ENG(m)/EWA(q)/EIR/EWP(t)/EWP(b)/  
EPA(b)-2 Pr-4/Ps-4/Pt-10/Pu-4 IJP(c) WH/JH/JD/JG/NT/WH  
ACCESSION NR: AP5006197 S/0226/65/000/002/0097/0103

AUTHOR: Gordiyenko, S. P. Fesenko, V. V.

TITLE: The use of mass spectrometry for studying refractory compounds.

SOURCE: Poroshkovaya metallurgiya, no. 2, 1965, 97-103

TOPIC TAGS: refractory compound, mass spectroscopy, high temperature research, thermal stability

ABSTRACT: The vapor pressure of refractory compounds (carbides, borides, silicides and nitrides) is an index of their stability at high temperatures and also gives a means for calculating their thermodynamic characteristics over a wide temperature range. The vapor composition must be known before the vapor pressure of the refractory compounds can be determined. Recent studies, particularly those on evaporation of oxides and halides, indicate that the vapors over compounds have a complex composition. Mass spectrometry is presently the most widely used method for determining vapor composition in the case of evaporation in a vacuum. This method gives a qualitative picture of the vaporization process, and when the second or third law of thermodynamics is applied to the results of mass spectrometry, the method gives a means for determining the thermochemical properties of each type of molecule found in the vapor (heat of sublimation, dissociation and combination).

Card 1/2

L 33518-65

ACCESSION NR: AP5006197

Without dwelling on the principle of mass spectrometric analysis, the authors give some of the peculiarities in design of the instruments for high temperature studies and the method by which the results are analyzed. An especially detailed study is made of the carbides with less attention being given to the nitrides, borides and silicides. Orig. art. has: 2 figures, 7 formulas, 9 tables.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Institute of Problems in the Study of Materials, AN UkrSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: MT, OP

NO REF SOV: 005

OTHER: 009

Card 2/2

I. 1680-66 EWP(e)/EWT(m)/EWP(i)/EWP(t)/EWP(b) IJP(c) JD/JG

ACCESSION NR: AP5020773

UR/0226/65/000/008/0070/0073

AUTHOR: Gordiyenko, S. P.; Samsonov, G. V.; Fesenko, V. V.

TITLE: Study of the evaporation of lanthanum hexaboride

SOURCE: Poroshkovaya metallurgiya, no. 8, 1965, 70-73

TOPIC TAGS: <sup>21</sup>lanthanum compound, <sup>51</sup>boride, lanthanum, heat change of state, vaporization, tungsten, cathode ray

ABSTRACT: The object of the study was to determine the composition of the vapor and of the heat of sublimation of lanthanum hexaboride. The investigation was carried out on a MI-1305 mass spectrometer. Source of the vapor was a chamber made of tantalum with a thickness of 0.03 mm, with apertures of 0.1-0.14 mm. Temperature measurement in the chamber was done with a OMP-019 pyrometer. Results show that lanthanum hexaboride evaporates chiefly as atomic lanthanum. The heat of dissociation of the reaction was determined as 561 kilojoules/mole. It is of particular interest that the emission of a tungsten cathode increases when

Card 1/2

L 1680-66

ACCESSION NR: AP5020773

2  
lanthanum is powdered onto it. In accordance with the quantum theory of film type cathodes, when lanthanum is powdered on the surface, there takes place a "suction" of the electron of the electropositive atom, in the given case lanthanum, into the lattice of the tungsten/absorbent. The sublimation heat of lanthanum hexaboride is estimated at  $536 \pm 8.8$  kJ/mole at a temperature of 2200 K. Orig. art. has: 2 formulas and 1 figure

ASSOCIATION: Institut problem materialovedeniya AN USSR (Institute for Problems of Materials Processing, AN USSR)

SUBMITTED: 20Aug64

ENCL: 00

SUB CODE: IC, MM

NR REF SOV: 007

OTHER: 002

Card 2/2



GORDIYENKO, S.P.; SAMSONOV, G.V.; FESENKO, V.V.

Investigating the vaporization of lanthanum hexaboride. Porosh.  
met. 5 no.8:70-73 Ag '65. (MIRA 18:9)

1. Institut problem materialovedeniya AN UkrSSR.

L 22659-66 EWT(m)/EPF(n)-2/EMP(t) IJP(c) JD/WW/JW/JG  
ACC NR: AP6007294 SOURCE CODE: UR/0226/66/000/002/0100/0107

AUTHOR: Bolgar, A. S.; Fesenko, V. V.; Gordiyenko, S. P. 68  
23

ORG: Institute of the Science of Material Problems AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Investigation of vaporization and thermodynamic properties of chromium carbides 68 27

SOURCE: <sup>27</sup> Poroshkovaya metallurgiya, no. 2, 1966, 100-107

TOPIC TAGS: chromium carbide, thermodynamic property, metal vapor deposition, vapor pressure, mass spectrometry, vaporization

ABSTRACT: The results of a mass spectrometric determination of the vapor composition, vaporization rate, and vapor pressure above chromium carbide by the effusion method are presented. It is shown that evaporation of chromium carbides is of a step nature — on heating, metal-rich carbides disproportionate on carbide with a lower metal content and gaseous chromium. The authors thank T. Ya. Kosolapov for providing chromium carbide powders. Orig. art. has: 1 figure, 7 formulas, and 4 tables. [Based on authors' abstract.]

SUB CODE: 11/ SUBM DATE: 10Jun65/ ORIG REF: 010/ OTH REF: 008/

Card 1/1

ACC NR: AP7003336

SOURCE CODE: UR/0076/66/040/012/3092/3094

AUTHOR: Gordiyenko, S. P.; Fesenko, V. V.; Fenchka, B. V.

ORG: Institute of Materials Science Problems, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Vapor composition and heats of vaporization of cerium, samarium, gadolinium and terbium hexaborides

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 12, 1966, 3092-3094

TOPIC TAGS: heat of vaporization, cerium compound, samarium compound, gadolinium compound, terbium compound, boride, heat of dissociation

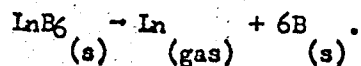
ABSTRACT: In order to arrive at a definitive explanation of the nature of vaporization and vapor composition over rare earth hexaborides, the authors studied the vaporization of  $CeB_6$ ,  $SmB_6$ ,  $GdB_6$ , and  $TbB_6$  using the apparatus and techniques employed previously, but also using Langmuir's method to produce a molecular beam. In each case, the spectra of ions in the range of 10-200 a.m.u. and 1900-2300°K showed only atomic ions of the lanthanides of the original hexaborides. At higher temperatures (2200-2500°K),  $11B^+$  and  $10B^+$  ions were observed, the ratio of boron-to-metal atom concentrations being no higher than 4:1. Curves of ion current intensity versus the energy of ionizing electrons were plotted and found to be linear, and the appearance potentials coincided with the ionization potentials of the elements, indicating the absence

Card 1/2

UDC: 541.11

ACC NR: AP7003336

of dissociative origin of the ions recorded. The data show that rare earth hexaborides at 1900-2300°K dissociate in accordance with the reaction



The heats of this reaction,  $\Delta H_T^0$ , for the hexaborides studied were calculated from the dependence of  $\log (IT)$  on  $1/T$  by the least-squares method. The lowest heat of dissociation, that of  $\text{SmB}_6$ , is 103 kcal/mole, and that of  $\text{CeB}_6$ ,  $\text{GdB}_6$  and  $\text{TbB}_6$  is 124, 128 and 129 kcal/mole respectively. An attempt is made to correlate these values with the electronic structure of the rare earth elements. Orig. art. has: 1 figure, 1 table and 2 formulas.

SUB CODE: 07/ SUBM DATE: 14Jan66/ ORIG REF: 004/ OTH REF: 001

Card 2/2

ACC NR: AM6036736

Monograph

UR/..

Fesenko, Valentin Vasil'yevich; Bolgar, Aleksandr Sergeyevich

Evaporation of refractory compounds (Ispareniye tugoplavkikh soyedineniy) Moscow. Izd-vo "Metallurgiya", 1966. 179 p. illus., biblio., tables. Errata slip inserted. 2300 copies printed.

TOPIC TAGS: refractory compound, refractory compound evaporation, refractory compound behavior, vacuum compound evaporation, vapor pressure

PURPOSE AND COVERAGE: This book is intended for scientific engineering personnel, material study specialists, designers, technologists, and metallurgists. It may also be useful to students of schools of higher education specializing in physics, chemistry and engineering. The book describes methods of investigating the behavior of refractory metals, carbon, boron, silicon, carbides, borides, silicides, and nitrides in vacuum at high temperatures. Data on the evaporation rate and pressure of vapors of these substances and also their thermodynamic properties is given. The book summarizes international publications up to 1964, and findings of the authors.

TABLE OF CONTENTS:

Foreword -- 3

Card 1/5

UDC: 536.423.1'546.3

ACC NR: AM0036736

Ch. I. Methods of measuring vapor pressure of refractory substances--5

1. Langmuir method -- 5
2. Knudsen method -- 8
3. Mass-spectrometric method of investigating evaporation processes -- 14
4. Evaluation of findings -- 17

Ch. II. Evaporation of metals: carbon and boron -- 20

- Beryllium -- 20
- Rare-earth metals -- 21
- Titanium -- 22
- Zirconium -- 23
- Hafnium -- 23
- Vanadium -- 24
- Niobium -- 24
- Tantalum -- 25
- Molybdenum -- 26
- Chromium -- 26
- Tungsten -- 27
- Rhenium -- 28
- Thorium -- 29
- Uranium -- 29
- Plutonium -- 30
- Carbon -- 32

2/5

ACC NR: AM0030736

Doron -- 32

Silicon -- 33

Germanium -- 35

## Ch. III. Thermodynamics of evaporation of refractory compounds -- 37

1. Equilibrium in the solid-gas system -- 37

2. Dependence of vapor pressure upon temperature -- 38

3. Calculation of reaction heat (sublimation, dissociation)  
upon vapor pressure -- 43

## Ch. IV. Evaporation of carbides -- 49

Basic physicochemical properties of carbides -- 49

Beryllium carbide -- 51

Calcium carbide -- 55

Barium carbide -- 56

Boron carbide -- 58

Aluminum and gallium carbides -- 61

Carbide of lanthanides -- 64

Silicon carbide -- 66

Germanium gaseous carbides -- 70

Titanium carbide -- 73

Zirconium carbide -- 78

Hafnium carbide -- 87

Vanadium carbide -- 91

Niobium carbide -- 98

Card 3/5

ACC NR: AM6036736

- Tantalum carbide -- 102
- Chromium carbide -- 108
- Tungsten carbide -- 109
- Manganese carbide -- 111
- Thorium carbide -- 114
- Protactinium carbide -- 114
- Uranium carbide -- 115
- Plutonium carbide -- 123
- Ch. V. Evaporation of borides -- 126
- Basic physicochemical properties of borides -- 126
- Lanthanum hexaboride -- 131
- Titanium diboride -- 132
- Zirconium diboride -- 135
- Tantalum boride -- 137
- Tungsten boride -- 138
- Uranium boride -- 138
- Ch. VI. Evaporation of silicides -- 141
- Basic physicochemical properties of silicides -- 141
- Germanium silicides -- 144
- Tantalum silicides -- 145
- Molybdenum silicides -- 147
- Rhenium silicides -- 150
- Uranium silicides -- 151

Card: 4/5



ACC NR: AM0030730

Ch. VII. Evaporation of nitrides -- 155

Basic physicochemical properties of nitrides -- 155

Boron nitrides -- 158

Aluminum nitrides -- 163

Silicon nitrides -- 165

Gallium nitrides -- 166

Titanium nitrides -- 166

Zirconium nitrides -- 169

Hafnium nitrides -- 170

Niobium nitrides -- 171

Tantalum nitrides -- 171

Chromium nitrides -- 172

Uranium nitrides -- 172

Plutonium nitrides -- 173

References -- 175

SUB CODE: 11/ SUBM DATE: 25Apr66/ ORIG REF: 025/ OTH REF:123/

Card 5/5

ACC NR: AP7004396

(N)

SOURCE CODE: UR/0226/67/000/001/0040/0043

AUTHOR: Bolgar, A. S.; Guseva, Ye, A.; Fesenko, V. V.

ORG: Institute of Problems of Material Science, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Thermodynamic properties of zirconium and hafnium carbides in the range 298-2500°K

SOURCE: Poroshkovaya metallurgiya, no. 1, 1967, 40-43

TOPIC TAGS: zirconium carbide, hafnium, carbide, thermodynamic property, ~~zirconium~~  
~~carbide~~ enthalpy, ~~hafnium carbide~~ enthalpy

ABSTRACT: The values of the enthalpy of zirconium and hafnium carbides (Tables 1 and 2) in the range 1300—2500°K have been determined by means of the

Card 1/2

UDC: none

ACC NR: AP7004396

Table 1. Enthalpy  
of zirconium carbide

T, °K	$H_T^\circ - H_{298}^\circ$ cal/mole
1340	12635
1523	14075
1643	15253
1728	16565
1798	17453
1800	17821
1896	18961
1908	19749
2053	21315
2083	21398
2140	22682
2175	23063
2260	24272
2400	26691
2550	28068

Table 2. Enthalpy  
of hafnium carbide

T, °K	$H_T^\circ - H_{298}^\circ$ cal/mole
1305	11820
1505	14509
1725	16899
1851	18615
1900	19280
2005	20531
2050	21489
2125	22347
2148	22441
2277	24795
2507	27883

mixing method. On the basis of data obtained from this experiment and that in the literature, the enthalpy heat capacity, entropy and reduced potentials of the carbides were calculated for the temperature range 298—2500°K. Orig. art. has: 4 tables. [TD]

SUB CODE: 11, 20/ SUBM DATE: 28Jun66/ ORIG REF: 002/ OTH REF: 003

Card 2/2 ATD PRESS: 5116

**FESENKO, Ye.A.**

Alimentation of alevins of the pike perch at a feeding station in the Don river and in the eastern part of the Taganrog Gulf. Dokl.AN SSSR 93 no.3: 559-562 N '53. (MIRA 6:11)

1. Dono-Kubanskaya nauchnaya rybokhosyaystvennaya stantsiya. Predstavleno akademikom Ye.N.Pavlovskim. (Taganrog Gulf--Perch)  
(Perch--Taganrog Gulf) (Don river--Perch) (Perch--Don river)

FESSENKO, YE. A.

USSR/Cosmochemistry - Geochemistry. Hydrochemistry, D

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61353

Author: Fesenko, N. G., Rogozhin, V. I., Fesenko, Ye. A., Sheynin, M. S.

Institution: None

Title: Prevalent Conditions of Dissolved Gases and Hydrobiology of the Tsimlyanskoye Reservoir during the Period of the First Winter Stagnation

Original

Periodical: Gidrokhim. materialy, 1955, 25, 98-114

Abstract: The first 1952-1953 winter period in the history of Tsimlyanskoye reservoir was characterized by a sufficiently high content of dissolved oxygen in the water from beginning to the end of the ice-bound period. This high  $O_2$  content was due during the initial period the intensive wind-induced aeration of the water and persisted thereafter as a result of low temperature of the water in conjunction with paucity of zooplankton and benthos. Small depth of the snowcover could contribute to production of  $O_2$  as a result

Card 1/2

*Hydrochem. Inst. AS USSR, Novocherkassk and  
Don-Kubanok Sci Rybkhkhozyaystvennaya Station, A-6  
Sci. Res. Inst. Ryblovskaya and Oceanography, Rostov-Don*

USSR/Cosmochemistry - Geochemistry. Hydrochemistry, D

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61353

Abstract: of life activities of phytoplankton, but with a small amount of biomass of the latter the quantity of phyto-genic  $O_2$  could not be considerable and was probably depleted by  $O_2$  consumption of the zooplankton. Retention of a relatively high  $O_2$  content was also sustained by a rise of the water level in the reservoir during the icebound period which prevents the discharge into the reservoir of ground waters poor in oxygen. Dynamics of vertical distribution of  $O_2$  is dependent upon the nature of the submerged vegetation.

Card 2/2

FESENKO, Ye.A., kand.biol.nauk; SHEYNIN, M.S.

Food supply of the larvae of commercial fishes in the Don River and  
the eastern part of the Taganrog Gulf. Trudy VNIRO 31:276-285 '55.  
(MIRA 11:6)

1. Dono-Kubanskoye otdeleniye instituta rybnogo khozyaystva.  
(Don Delta--Fishes--Food) (Taganrog Gulf--Fishes--Food)

FESENKO, Ye.A., kand.biol.nauk

Nutrition of young pike perch and bream in the lower Don. Trudy  
VNIRO 31:286-305 '55. (MIRA 11:6)  
(Don River--Perch) (Don River--Bream) (Fishes--Food)



FESENKO, Ye. A.

~~FESENKO, Ye. A.; SHEYNIN, M. S.~~

Quantitative fluctuations of zooplankton of the lower reach of the  
Don River and the eastern part of the Taganrog Gulf. Dokl. AN SSSR  
111 no.1:202-205 E-D '56. (MLRA 10:2)

1. Predstavleno akademikom Ye. N. Pavlovskim.  
(Don River--Zooplankton) (Taganrog Gulf--Zooplankton)

FESSENKO, E. G.

USSR/Physics - Crystallography

11 Jun 51

"New Varieties of Monocrystalline Barium Titanate," I. N. Belyayev, N. S. Novosiltsev, A. L. Khodakov, E. G. Fessenko

"Dok Ak Nauk SSSR" Vol LXXVIII, No 5, pp 875- 877

184T105

4/2 C-

U S R

The dielectric properties and optical anomalies of single crystals of  $\text{BaTiO}_3$ . I. N. Ilyusky, N. S. Novikova, G. P. Reshetko, and L. E. Khodakova. Zhur. Prikl. Fiz. 1973, No. 23, 271-274 (1973); Zhur. Atom. Energ. 1973, No. 46, 688-690. Crystals (I) of  $\text{BaTiO}_3$  obtained by decomposition of  $\text{BaCl}_2$  and  $\text{Na}_2\text{TiO}_3$  were purer than those II and III deposited from solutions of  $\text{BaTiO}_3$  in  $\text{Na}_2\text{K}_2\text{F}_6$ . The Curie point of I was near that of the polycrystalline material. The structure of I was weak and disordered. Crystals II and III contained large amounts of impurities. The Curie point of II was near that of the polycrystalline material. The structure of II was weak and disordered. The Curie point of III was near that of the polycrystalline material. The structure of III was weak and disordered.

7  
3  
3

125 Variations in  $\text{BaTiO}_3$  Single Crystals With Temperature. I. N. Belyaev, N. S. Naryshkin, E. G. Frenkel, and A. L. Khodnikov. Henry Brucher. ~~Abstract~~ ~~Translation~~ no 2976, 4 p. (From Doklady Akademii Nauk SSSR, 193, no. 5, 1932, p. 675-676.)  
Chemical and spectrum analyses of crystals grown from a  $\text{BaTiO}_3$  solution and of crystals obtained by a double decomposition reaction. Graphs. 4 ref.

702  
6-21-55

Phys-Math. Inst., Rostov State U.

FESENKO, Ye. G.

*Nuclear Sci. Abs.*  
*V-7 Nov 30, 1953*  
*Physics*

DOMAIN STRUCTURE OF LEAD TITANATE, E. G.  
Fesenko [Ye. G. Fesenko]. Translated from Doklady Akad.  
Nauk S.S.R. 88, 785-6(1953). 2p. (NSF-tr-64; D-88-785)  
PbTiO<sub>3</sub> has a tetragonal cell with  $a = 3.90 \text{ \AA}$  and  $c = 4.147 \text{ \AA}$ . The refractive index is 2.65. Domains, spontaneously polarized regions, are found in these crystals with linear dimensions close to  $100 \mu$ . The domains are unchanged by temperatures up to  $400^\circ\text{C}$ , but a further rise in temperature causes a slow reduction in size. In the vicinity of  $500^\circ\text{C}$  the domains disappear. If the temperature does not reach  $500^\circ\text{C}$ , the domain structure returns to its original form upon cooling. (J.S.R.)

*Math*

*(2)*

*MF*  
*7-13-59*

*Rostov State U.*

Dissertation: "Crystalline Structure of Zoisite." Cand Phys-Math Sci, Inst of Crystallography, Acad Sci USSR, 9 Jun 54. Vechernyaya Moskva, Moscow, 31 May 54.

SO: SUM 284, 26 Nov 1954

USSR/Physics - X-ray analysis

FD-907

Card 1/1 Pub 153-16/26

Author : Fesenko, Ye. G., and Slabchenko, A. G.

Title : X-ray structural analysis of solid solutions of (Ba, Pb)  $\text{TiO}_3$

Periodical : Zhur. tekhn. fiz. 24, 1288-1290, Jul 1954

Abstract : Two series of specimens  $\text{BaO} - \text{TiO}_2$  and  $\text{PbO} - \text{TiO}_2$  annealed at various temperatures were analyzed by x-rays for phase structure. During annealing the formation reaction of  $\text{BaTiO}_3$  and  $\text{PbTiO}_3$  was found terminated within an hour at temperatures of 800 and 700°C respectively. Three references including one US.

Institution : --

Submitted : August 1, 1953

*FESSENKO, Ye. G.*  
Category : USSR/Solid State Physics - Structural crystallography

E-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1130

Author : Fesenko, Ye.G., Rumanova, I.M., Belov, N.V.  
Title : Crystal Structure of Cyosits.

Orig Pub : Dokl. AN SSSR, 1955, 102, No 2, 275-278

Abstract : An x-ray diffraction study was made of cyosite  $\text{Ca}_2\text{Al}_3\text{Si}_3\text{O}_{12}(\text{OH})$ : a 16.20, b 5.50, c 10.14 kX, Z = 4, Fedorov group  $D_{2h}^{16}$  -- Pnma. The structure was determined from the usual and generalized projections of the electron density on xz. The large number of  $F_{h0l}$  and  $F_{hll}$  amplitudes determined in molybdenum radiation (407 and 277 respectively) make it possible to apply the statistical method to the determination of the signs. The single amplitudes were obtained from the relative ones taking into account the temperature correction at B = 0.7 kX<sup>2</sup>. The reference group of signs was determined using a method previously described (Referat Zhurnal Fizika, 1956, 34590); this method made it possible to determine 21 signs of  $F_{h0l}$  and 218  $F_{hll}$ . The projections constructed from these data gave the approximate coordinates of almost all the atoms; they were used to determine the signs of all the amplitudes. The foundation of the structure is made up of single columns of Al-octahedra, which extend along the

Card : 1/1



Category : USSR/Solid State Physics - Structural crystallography

E-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1130

b axis; adjacent to the columns are single octahedra, corresponding to the Fe-octahedra in epidote. The columns of octahedra are joined by ortho-groups ( $\text{SiO}_4$ ), diortho-groups ( $\text{Si}_2\text{O}_7$ ) and Ca- seven-cornered structures. The inter-atomic distances for Si -- O range from 1.53 to 1.70 kX, for O -- O (ribs of the tetrahedra) from 2.52 to 2.82, for Al -- O (in the octahedra comprising the columns) from 1.93 to 2.02, and for Al -- O (in the single octahedra) from 1.79 to 2.08 kX. The Si-O-Si valence angle is  $162^\circ$ .

Card : 1/1

*Fesenkp, Ye. G.*

USSR / Solid State Physics / Structural Crystallography

E-4

Abs Jour : Ref Zhur - Fizika, No. 5, 1957 No. 11655

Author : Fesenkp, Ye. G., Rumanova, I. M., Belov, N. V.

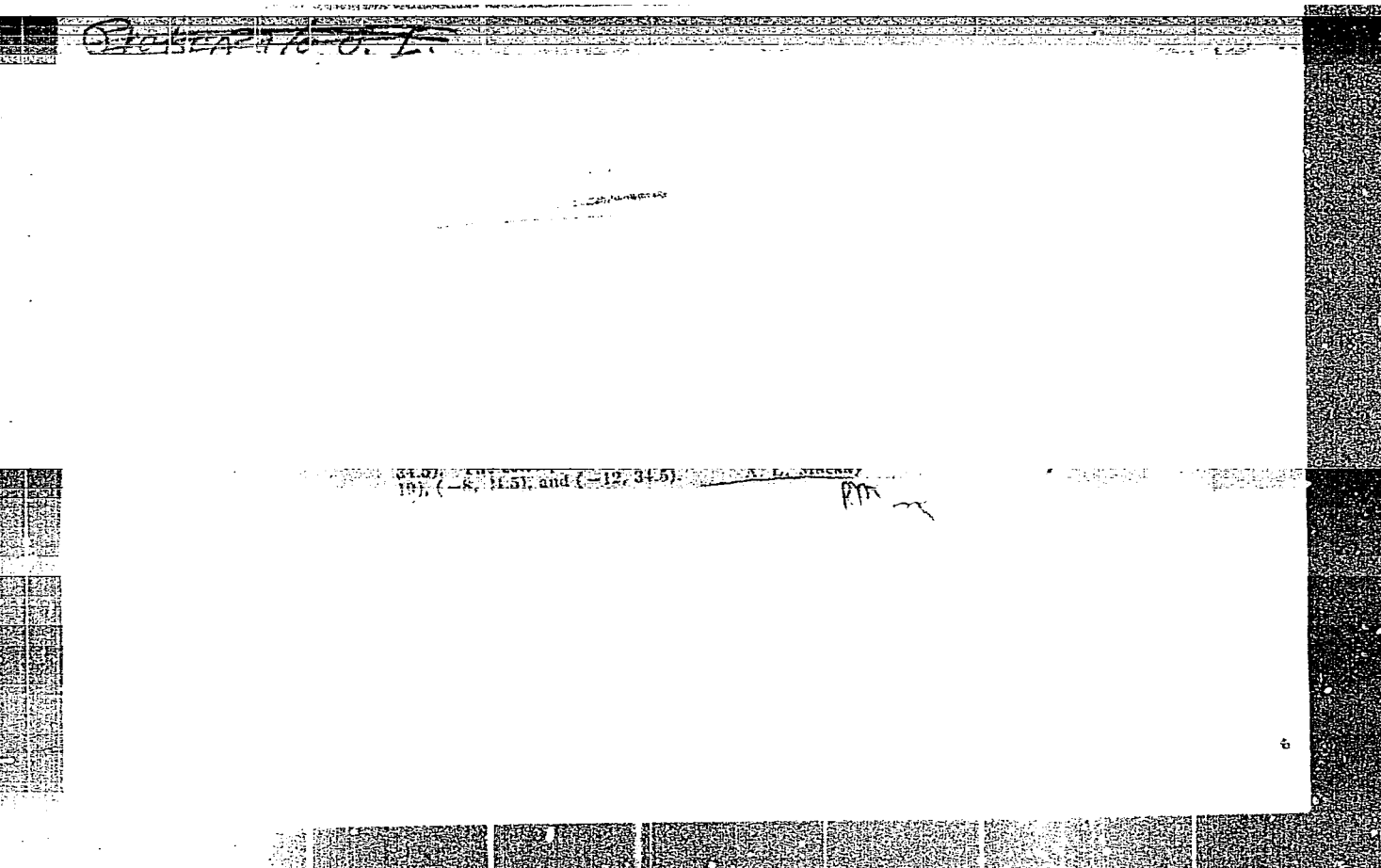
Inst : -

Title : Crystalline Structure of Zoisite.

Orig Pub : Kristallografija, 1956, 1, No.2, 171 - 196.

Abstract : The elementary cell of zoisite  $\text{Ca}_2\text{Al}_3\text{SiO}_4\text{O}(\text{OH})$ , determined from the X-ray patterns of totation and from the far pinacoids of the zero development, is rhombic:  $a=16.20$ ,  $b=5.50$ ,  $c=10.14\text{kX}$ ; Fedorov group  $D_{16}^{2h} = \text{Pnma}$ . The total determination of the crystalline structure of zoisite is effected through a direct determination of the science of the structural amplitudes by statistical equations. A procedure is developed in detail for the separation of the reference group of signs for such a distribution.

Card: 1/1



FESENKO, YE. G., PROKAPALO, O.I.

"Isomorphous Mixtures of Barium Titanate With Barium Ferrate,"  
by Ye. G. Fesenko and O. I. Prokapalo, Scientific Research  
Physicomathematical Institute, Rostov State University imeni  
V. M. Molotov, Kristallografiya, Vol 1, No 6, Nov/Dec 56, pp  
703-707

The structure and dielectrical properties of  $\text{BaTiO}_3$  -  $\text{BaFeO}_3$  mixtures depending on the  $\text{BaFeO}_3$  content were investigated within the range of 0-5% of  $\text{BaFeO}_3$ . A qualitative difference between the dielectric properties of mixtures containing less than 3% of  $\text{BaFeO}_3$  and mixtures containing more than 3% of  $\text{BaFeO}_3$  was found to exist. It was established that at a low Fe content the seignettelectric properties of  $\text{BaTiO}_3$  are retained, but the temperatures of the phase transitions are displaced towards lower temperatures. This is contrary to the assumption previously made by the authors that in ideal  $\text{BaFeO}_3$  with a perovskite structure a seignettelectric phase transition ought to take place at a lower temperature than in  $\text{BaTiO}_3$ . The explanation given is that the quadrivalent Fe ion is apparently unstable, and that Fe enters into the  $\text{BaTiO}_3$  lattice in the form of trivalent ions. As a result of this, the Curie point is lowered.

SUM. 1287

FESENKO Ye G.

B-5

USSR /Physical Chemistry. Crystals.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25081

Author : A.L. Khodakov, M.L. Sholokhovoch, Ye.G. Fesenko, O.P. Komarov

Title : Monocrystals of Strontium Titanite.

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 11, 2505 - 2507

Abstract : The monocrystals of  $\text{SrTiO}_3$  (I) were prepared by crystallization 1) in a solution of I in the melt of potassium fluoride and, 2) in a solution of I in the melt of a mixture of 60 mol. % of  $\text{Na}_2\text{CO}_3$  + 40 mol. % of  $\text{K}_2\text{CO}_3$ . Crystals prepared by the 1st method are quite transparent, of light yellow color and are confined within faces {100}, the edges being 1 mm long; the structure is that of perovskite with ideal cells; the refraction index is 2.35, the x-ray density is 5.12, the picknometer density is about 5.0. Crystals prepared by the 2nd method are less transparent of a smoky color, the prevailing faces are {100} and {111}, and they contain up to 0.7% of Fe; their x-ray density is 5.14. The dielectric properties of both these kinds are somewhat different.

Card : 1/1

SUBJECT  
AUTHOR  
TITLE

USSR / PHYSICS

CARD 1 / 2

PA - 1221

CHODAKOV, A.L., ŠOLOCHOVIČ, M.L., FESENKO, E.G., KRAMAROV, O.P.  
The Production and the Dielectric and Optical Properties of the  
Monocrystals of Solid Solutions of Barium Titanate and Strontium  
Titanate.

PERIODICAL Dokl. Akad. Nauk, 108, 825-828 (1956)  
Publ. 6 / 1956 reviewed 8 / 1956

The monocrystals were bred in platinum bowls from solutions of the mixtures of barium- and strontium titanate in potassium fluoride by evaporation of the latter at the crystallization temperature of the solid solutions and by subsequent slow cooling down to the temperature of complete solidifications. As a basis for this method there served the crystallization surface of the system  $K_2F_2$ - $SrTiO_3$ - $BaTiO_3$ , which was examined up to  $1100^\circ$  by the visual-polythermal method. The continuous series of the solid solutions produced in the system  $BaTiO_3$ - $SrTiO_3$  at  $1350^\circ$  is conserved up to room temperature and is retained without change also when dissolved in potassium fluoride. Therefore the surface of crystallization of the system  $K_2F_2$ - $BaTiO_3$  consists only of two phases, i.e. of potassium fluoride, which occupies a very small part of the crystallization surface of the system, and of the solid solutions  $(Ba-Sr)TiO_3$ , which take up the remaining part of the system. The crystals are light yellow to cinnamon colored and up to 1,5 mm in size.

Dokl. Akad. Nauk, 108, 825-828 (1956)

CARD 2 / 2

PA - 1221

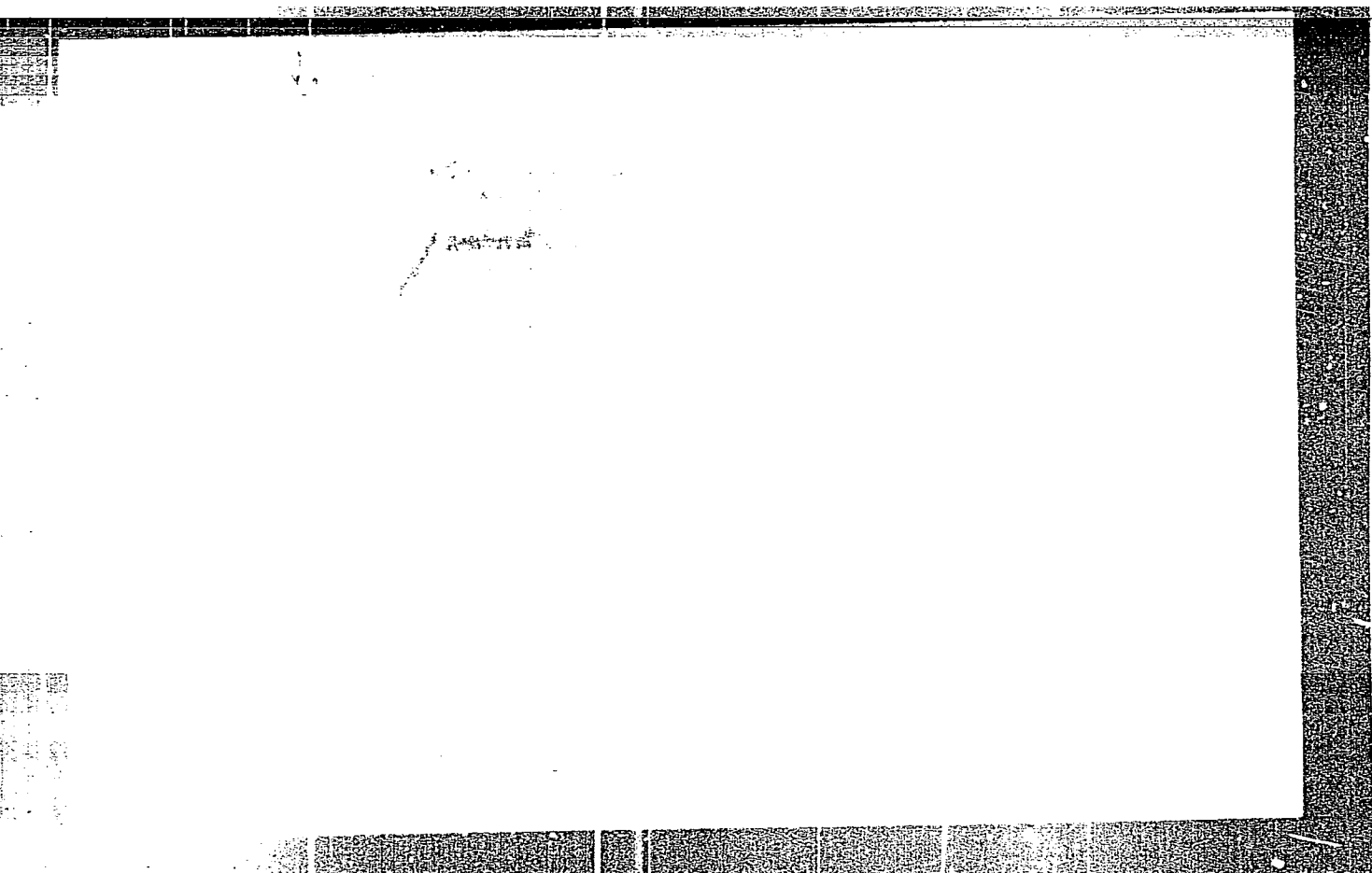
The dielectricity constant  $\epsilon$  and the tangent of the angle of loss  $\delta$  were investigated at  $-160^\circ$  to  $+150^\circ$  and at frequencies of  $10^3$  Hertz and from  $10^6$  to  $20 \cdot 10^6$  Hertz on cuboid crystals with burnt-in silver electrodes. As a result of being heated for two hours up to a temperature of  $1350^\circ$  the crystal has become slightly seignette-electric, and the temperature dependence of  $\epsilon$  has a marked peak at the CURIE point. As a result of this heat treatment the temperature dependence of  $\epsilon$  has two marked maxima near the temperatures which correspond to the CURIE points of the polycrystalline solid solutions. The temperature dependence of  $\epsilon$  and  $\tan \delta$  is shown in a diagram. After heating the crystal assumes more marked nonlinear properties and loses the dispersion of the dielectricity constant in the heated frequency domain. In the case of all crystals polarization depends nonlinearly on the field strength  $E$  of the connected field.

According to electric, optical, and roentgenological data, monocrystals of a continuous series of solid solutions were obtained by this work. Heat treatment probably does away with mechanical deformations which render a new orientation of domains, and thus also the polarization of dielectrics difficult.

INSTITUTION: Physical-Mathematical Institute for Scientific Research of the V.M. MOLOTOV University in Rostov on Don.

**"APPROVED FOR RELEASE: 08/23/2000**

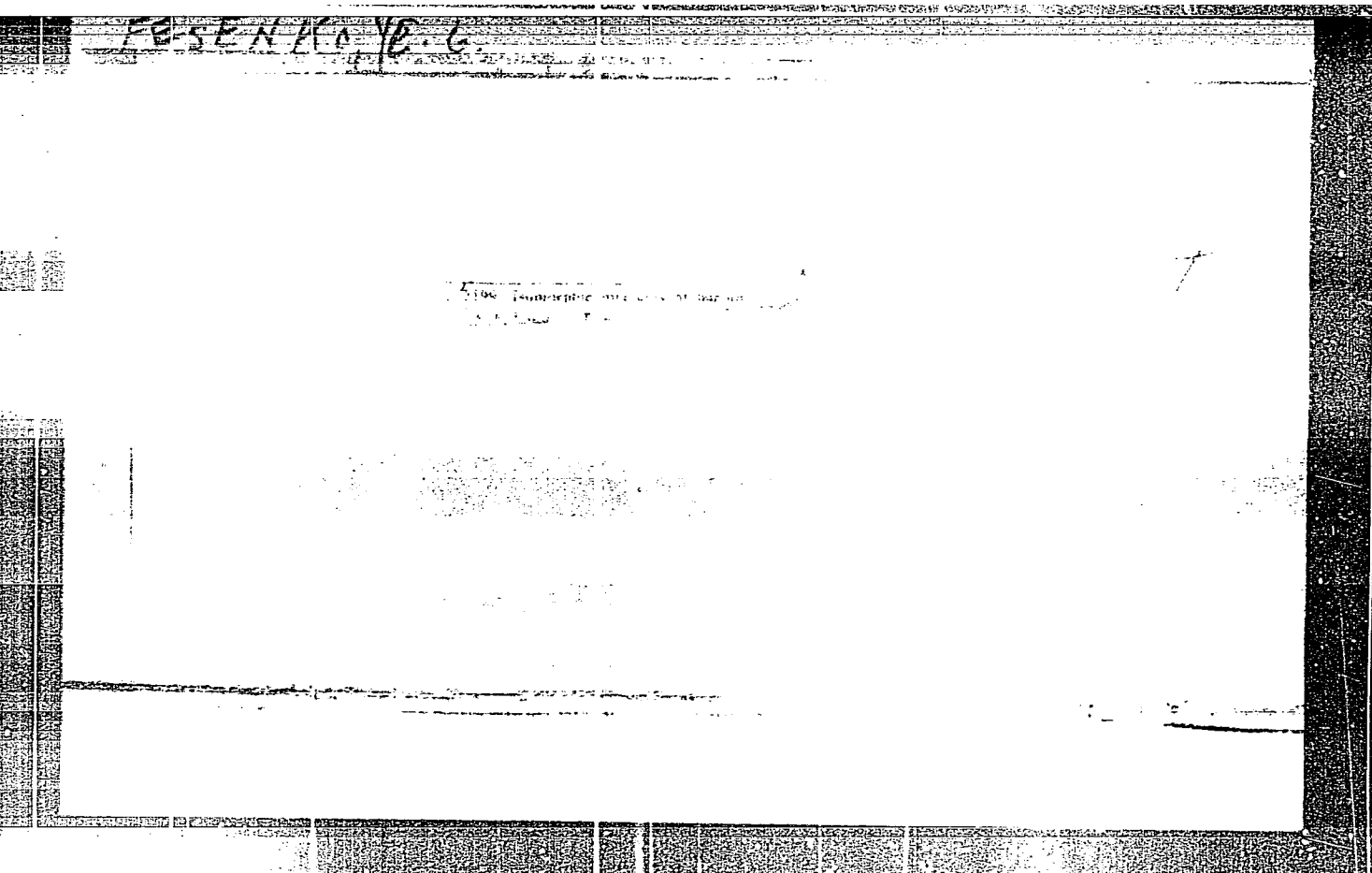
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**APPROVED FOR RELEASE: 08/23/2000**

**CIA-RDP86-00513R000412920007-6"**





PESENKO, Ye.G.; KRAMAROV, O.P.; KHODAKOV, A.L.; SHOLOKHOVICH, M.L.

Certain characteristics of  $\text{PbTiO}_3$  single crystals and  $(\text{Ba,Pb})\text{TiO}_3$   
solid solution single crystals. Izv. AN SSSR, Ser.fiz. 21  
no.3:305-310 Mr '57. (MLRA 10:7)

1. Nauchno-issledovatel'skiy fiziko-matematicheskii institut pri  
Rostovskom n/D gosudarstvennom universitete im. V.M. Molotova.  
(Lead titanate) (Barium titanates)

*Fesenko, Ye. G.*

SUBJECT: USSR/Luminescence 48-3-1/26

AUTHORS: Novosil'tsev, N.S., Khodakov, A.L., Sholokhov, M.L.,  
Fesenko, Ye.G. and Kramarov, O.P.

TITLE: The Cultivation and Investigation of Ferroelectric Monocrystals  
(Vyrashchivaniye i issledovaniye monokristallov segneto-  
elektrikov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya fizicheskaya, 1957, Vol 21,  
#3, pp 295-304 (USSR)

ABSTRACT: The Scientific Research Physico-Mathematical Institute at the  
ROSTOV/DON State University has studied the interaction of  
barium titanate, strontium titanate, lead titanate and lead  
zirconate with a series of substances in the molten state. A  
number of suitable salty solvents for the above mentioned sub-  
stances and crystallization conditions have been established.  
Several methods for cultivating crystals of barium and stron-  
tium titanates and zirconates were applied:

a. Monocrystals of  $\text{BaTiO}_3$  and  $\text{SrTiO}_3$  were obtained out of  
a molten mixture of sodium and potassium carbonates and poly-  
crystalline barium and strontium titanates. These monocrystals

Card 1/4

48-3-1/26

## TITLE:

The Cultivation and Investigation of Ferroelectric Monocrystals  
(Vyrashchivaniye i issledovaniye monokristallov segneto-  
elektrikov)

were obtained out of a molten mixture of potassium fluoride  
and respective titanates.

b. Monocrystals of the lead zirconate were obtained out of  
a molten mixture of potassium fluoride with polycrystalline  
lead zirconate.

Three different consignments of barium titanate crystals were  
grown. They differed in the value of c/a ratio. The Curie  
point of these crystals was at temperatures of 50°, 80° and 110°C.

During the careful studies of BaTiO<sub>3</sub> monocrystals, it was found  
out that many of their properties can be changed under the in-  
fluence of various factors: some crystals aged (but the aging  
is reversible); some crystals after being subjected to strong  
heating and rapid cooling down, showed (during 3 days) a re-  
duced dielectric permittivity from 2,750 to 1,900; some barium  
titanate monocrystals darkened by heating in vacuum and by  
cathode bombardment. This darkening was not accompanied with  
any structural changes but electric conductivity increased to  
such a degree that the measuring of dielectric parameters  
became impossible.

Card 2/4